THE AMERICAN JOURNAL
OF
OPHTHALMOLOGY

VOL. XXIX. JUNE, 1912. No. 6

ORIGINAL ARTICLES.

SARCOMA OF THE CHOROID: UNUSUAL CLINICAL FEATURES.*

By John Green, Jr., M.D.,
ST. LOUIS, MO.

The following case of choroidal sarcoma presents so many unusual clinical features that it seems worthy of record.

Mr. N. T. S., age 37, came under observation January 18, 1912. The patient was tall and thin and appeared to be in good general health. One sister died of tuberculosis, otherwise family history negative. (No history of malignancy.) The patient had had few general ailments. No venereal infection. In February, 1911, he developed a severe attack of pertussis. After one of the coughing paroxysms he noticed that the vision of the right eye had suddenly become very dim. This was the first intimation that anything was wrong with the eye. Assuming that the trouble was transitory the patient did not immediately consult an oculist. Three weeks later, vision remaining unimproved, he saw Dr. X, who examined his refraction and changed his glasses. The patient still complaining of misty vision, Dr. X examined his field and found (personal communication) "a scotoma situated nasally, and about three disks size located slightly below the horizontal line. This area did not increase during the two months he remained under observation. Concluding that the trouble was due to some form of exudate, I worked along that line, but with no

*Read at the meeting of the Ophthalmic Section of the St. Louis Medical Society, May, 1912.

real success. R.V. 20/40; L.V. 20/30+." Six months later Mr. S. consulted Dr. Y., who made a diagnosis of "hæmorrhage beneath the retina followed by a retinal rent on the temporal side. R.V. 20/70. Field limited to right. Considerable pain. V. 20/70 improved to 20/50 and field became normal. All pain disappeared" (personal communication).

Dr. Y's treatment consisted of medicines internally and "vibration" locally. While under Dr. Y's care numerous black spots appeared "before the sight".

Jan. 18, 1912.—Present complaint is of misty and distorted vision. Examination.—Right eye: Pupil is a trifle larger than L.; reacts well to light and convergence. Globe divergent 10°. No congestion. R.V. 5/25 excentric (looks 30 cm. to left of letter named). L.V. 5/4 Hm. 37 V. 5/4.

Ophthalmoscope.—R. eye. About two disk diameters to temporal side of disk a mass roughly spherical in shape projects into the vitreous. That portion nearest the disk appears to overhang, i.e., the attachment of the mass to the subjacent tissues seems to be farther to the temporal side of the disk than the visible edge. The same is true of the visible borders above and below. To the temporal side the mass gradually shelves off to the level of the retina, but with some irregularities of contour above and below. The surface is dark gray, with attenuated retinal vessels showing here and there and a few minute hæmorrhages. No movement of the retina on lateral or vertical excursions of the globe. Apex of mass seen with +15D. behind the mirror (hyperopia by skiascopy, 1D.). A few fine granular floaters in vitreous. L. eye normal.

By focal illumination, the mass can be dimly seen as a yellowish red nodule over the surface of which course retinal vessels. The site of the mass, at and adjacent to the posterior pole, rendered it impossible to get any information as to its probable nature by scleral transillumination.

Tension to finger palpation was apparently slightly minus in the right eye, and this impression was confirmed by the Schiötz tonometer which showed R.T. 15, L.T. 18 mm. Hg.

The field for white (Jan. 22, 1912) showed a slight peripheral contraction and an absolute scotoma, roughly triangular in shape, occupying nearly the lower half of the upper nasal field.

Blood examination: No leukocytosis, no leukopenia, no eosinophilia. Urinalysis, negative. Wasserman reaction, negative. Von Pirquet vaccination, negative.

Was it possible, on the basis of the given data, to arrive at a correct clinical diagnosis? The following possibilities were considered:

1. Simple separation of the retina.
2. Separation due to massive subretinal hæmorrhage.
3. Separation of the choroid.
4. Solitary tubercle of the choroid.
5. Subretinal cysticercus.
6. Sarcoma.

Simple separation could almost positively be excluded as there was no visible motion of the retina on movements of the globe. This possibility would hardly have been considered at all, but for the presence of vitreous floaters and the fact of a slightly diminished tension. Separation due to massive subretinal hæmorrhage seemed more probable; recall, however, that Dr. X. who saw the patient only three weeks after the beginning of the trouble found a scotoma which he believed was due to "some form of exudate." It is hardly conceivable that had there been a massive subretinal hæmorrhage at this time it should not have been perfectly visible to ophthalmoscopic examination.

Separation of the choroid occurring idiopathically is an extremely rare condition. Most of the observed cases have followed injury or cataract extraction. With the retina still in contact with the subjacent mass, it should have been possible to observe the underlying choroidal vessels, if we had been dealing with a detachment of the choroid. No such appearance was visible.

Solitary tubercle of the choroid, may, in its early stages simulate sarcoma. It is extremely doubtful whether a tuberculous mass would have made such slow progress, and most certainly it would have been accompanied by more definite signs of inflammatory reaction, e.g., retinal œdema, vitreous opacities, etc., than was actually the case.

Neither the past appearance, as gleaned from Drs. X and Y, nor the present picture, pointed to the presence of a cysticercus. The patient denied ever having had a tænia.

The patient was seen in consultation with Dr. A. E. Ewing, who agreed with the diagnosis of choroidal sarcoma. Dr. Alt, who was also called in consultation, admitted the probability of malignant growth, but, recognizing the many atypical clinical features, counselled delay in the hope that further developments might render the diagnosis more certain.

Accordingly the patient was sent home, returning one month later. A reinspection of the growth showed that the apex was now visible with a +17.D lens and the shelving portion to the outer side was more prominent. V. had diminished =5/32+. The consultants concurring in my advice for an immediate enucleation, the eye was removed March 7th.

On section a solid whitish tumor, of choroidal origin, and surmounted by a massive hæmorrhage, was found situated 2 disks to the temporal side of the papilla. Dr. Alt will describe the microscopical appearances.

I believe that the series of pathological events in the present case would be about as follows: Prior to the attack of pertussis, a minute paramacular choroidal growth had slightly separated the overlying retina. During the severe coughing spell, the separation suddenly became more extensive, though still sharply limited to an area corresponding to not more than two disk diameters. This was the condition at the time of Dr. X's observation. The tumor then very slowly enlarged but without occasioning any greater degree of retinal detachment. During Dr. Y's observation occurred a hæmorrhage from the growth into the subretinal spaces.

The points worthy of note are:

1. The occurrence of the first symptoms during pertussis.
2. The extreme slowness of the growth.
3. Diminished tension in the eye containing the tumor (C. Devereux Marshall has declared that tension is probably never diminished in an eye containing a tumor).

Doctor of Ophthalmology.—At the recent meeting of the regents of the University of Colorado, on the recommendation of the medical senate, it was resolved hereafter to confer the degree of doctor of ophthalmology on properly qualified candidates. This degree can be secured two years after taking the degree of doctor of medicine. Candidates are required to take one year of practical clinical work in diseases of the eye, doing in connection therewith systematic reading, after which they must take the special course in ophthalmology at the University of Colorado, in Denver, and submit an acceptable thesis.

MICROSCOPICAL EXAMINATION OF THE EYE IN THE CASE OF CHOROIDAL TUMOR REPORTED BY DR. GREEN, JR.

By Adolf Alt, M.D.,
St. Louis, Mo.

A section through the center of the tumor, and the optic nerve after having been hardened, showed its greatest height to be a little over eight millimeters. It had the well-known mushroom shape, starting from the choroid with a broad base (about 15 millimeters), which gradually grew smaller toward a part which showed a slight constriction, from which in turn a round smaller nodule protruded further into the eye.

The posterior and central part was of a grayish white color, the periphery of the base, and especially the most anterior part of the tumor, were darkly pigmented.

The retina at the very macula was firmly adherent to the top of this tumor, and lifted up for a varying distance from the underlying tumor and the neighboring choroid by an exudate which on the one side reached to the papilla and on the opposite one for the distance of some millimeters beyond the base of the tumor.

On microscopical examination the tumor was found to consist mainly of spindle cells and was frequently separated into larger and smaller portions by connective tissue trabeculæ, giving it an alveolar appearance. Microscopically tumor elements could be traced much farther into the adjacent very hyperæmic choroid than the macroscopical appearance of the base of the tumor had led one to believe.

The anterior part of the tumor was very vascular, and besides many bloodvessels with a distinct wall there were numerous and large blood spaces.

The retina, where it was firmly adherent to the apex of the tumor, was changed to a thin layer of connective tissue containing a great deal of loose pigment and pigment contained in cells. Close to the apex the elements of the retina by the dragging during the growth of the tumor were pulled apart and atrophied. A little distance away, however, the retinal elements was but little altered.

In one place near the periphery of the retina I found a num-

ber of small clusters of cells in the outer layers of the retina which contained pigment, perhaps the result of former hæmorrhages.

The considerable amount of exudation by which the retina was detached all around the tumor from it and the surrounding choroid, was plainly hæmorrhagic in nature.

The tumor was still absolutely confined to the region of the macula. Nowhere were any secondary nodules to be found even microscopically, unless the small nodules of pigment cells in the retina, just referred to, were of that character. Its base was not even adherent to the sclerotic, although this membrane appeared somewhat thinner than normal just behind the tumor.

The anterior third of the eyeball showed nothing abnormal.

From these conditions, it seems that we may hope that no recurrence of the tumor will occur.

It is not improbable that when the first hæmorrhage was diagnosed ophthalmoscopically, the tumor was already growing and its existence was hidden behind this hæmorrhage. The histological examination shows that during its further growth further hæmorrhages must have occurred.

TWO CASES OF VERNAL CONJUNCTIVITIS.

By Julius Gross, M.D.,
ST. LOUIS, MO.

According to Saemisch in the latest edition of Graefe-Saemisch, in the year 1846, Arlt in his treatise on the Conjunctiva expresses himself as follows:

"Without marked inflammatory symptoms preceding, or being present, I saw this conjunctival border of the cornea, through infiltration of a grayish yellow transparent gelatinous mass raised and changed into a more or less diffuse swelling. (In 3 cases.)" The youngest patient was 10, the oldest 16 years of age.

Von Graefe in his lectures, published by Hirschberg in 1871, mentions these prominences under the name of phlyctæna pallida, and he also speaks of the papillary excrescences on the palpebral conjunctiva.

Desmarres speaks of a hypertrophie pericératique de la con-

junctive, by which he certainly likewise describes the hypertrophy at the corneal limbus (Limbuswucherung) of vernal conjunctivitis (1874).

The case described by Camuset, in 1874, of a peculiar affection of the bulbar conjunctiva in a boy of 16 and which had begun seven years before, Saemisch believes was also a case of vernal conjunctivitis. Camuset proposed to name this affection epithelial leukophthalmus.

In 1872 Brockhaus, a student, working under Saemisch, in a dissertation described a case of vernal catarrh (Fruehjahrskatarrh).

In 1875 Saemisch, in the first edition of Graefe-Saemisch, emphasized the typical rotation of its course as well as its great tendency to relapse every spring and to affect exclusively children, or youthful persons.

In the meantime (1875) Reymond had published the result of his clinical and pathologico-anatomical researches in nine cases of the disease, and pointed out the connection of the thickening, the peculiar coloring, and the papillary hypertrophy of the palpebral conjunctiva, which latter had escaped the eye of Saemisch, and which as has been shown form a very essential part of the symptom-complex.

In 1879 Vetsch published a dissertation which was the result of the work which he did under the direction of Horner of Zürich. It represented a clinical and pathologico-anatomical examination of 37 cases of the disease. He emphasized the greater frequency of the affection in males and confirmed the statements of the characteristics upon which Saemisch had previously laid stress.

Saemisch says: "That conjunctivitis vernalis always develops in both eyes. It affects either the bulbar conjunctiva, and especially the limbus of the cornea; or the palpebral conjunctiva, and especially that of the upper lid; most frequently, however, both of the afore mentioned portions of the conjunctiva at the same time. These changes are accompanied by only slight symptoms of irritation. In the horizontal meridian of the globe, at the corneal limbus, in the bulbar conjunctiva there develop yellowish gray, partly gelatinous and wax-like solid elevations in which constrictions resembling those of the large intestine may be recognized. These are white in some places but at other points appear transparent. Their surface often appears dull, like having dried up. They may reach a height of several millimeters

and slope abruptly toward the cornea, which they surround like a wall, while they sink gradually into the conjunctiva of the globe. The bulbar conjunctiva extending to the angles of the lids in the form of a triangle is thickened, loosened, of dull gray or grayish brown color. Its surface does not appear reflecting (or shining), but dull like xerotic conjunctiva. It is traversed by superficial partly tortuous vessels which have a meridional direction, and at times have a distinct connection with the vessels of the posterior part of the conjunctiva. Very peculiar is the tone of color which the injected conjunctiva shows. It is a subdued, faded, delicate pale red; the freshness, the liveliness which characterizes conjunctival injection otherwise is lacking. Because of this the affected eye has a dull, tired, muddy expression, which is still heightened by the drooping of the heavy upper lid which appears inactive and less movable. The drooping of the lid results from the participation of the palpebral conjunctiva in the pathological changes, which however as stated, may not be present.

The palpebral conjunctiva to the retrotarsal fold appears of a dull, faded, pale, red color, which has a suggestion of bluish white as if the conjunctiva were covered with a thin film of milk. While the surface of the conjunctiva of the lower lid in the great majority of cases has remained smooth and has only been thickened a little that of the upper lid becomes covered with fungoid, low, flattened almost round firm prominences lying close together, as if it had been paved with them.

The retrotarsal folds remain unchanged. They appear neither infiltrated nor injected and retain a smooth surface, and it is to be noticed that lymph follicles are very seldom formed. The secreting activity of the conjunctiva usually remains normal; however, in some cases it is increased; certainly only very exceptionally, and only temporarily to any degree.

This peculiar disease develops most frequently in boys from the age of six to puberty; and at the commencement of the warm season; to reach its height at mid-summer; to decline in autumn, to leave the tissues of the eye almost normal in winter.

The peculiarity of this disease does not cease here, but it is characterized by an annual recurrence in spring, and a recession in autumn; for a period of four to six years and in some cases even for 15 or more years in a lesser, like or greater severity and then to cease.

The symptoms of vernal catarrh of the conjunctiva consist

mainly, in a slight irritability, at the commencement of the warmer season, in March or April. This irritability manifests itself in a hypersensibility to warmth, dust, smoke, light and especially sunlight, and in itching, also by a sticking sensation and a brief burning sensation. And these symptoms gradually increase with the rising general temperature, and especially when there occur no remissions in the temperature, and reach their height in July and August.

In cases in which an increased secretion has developed the symptoms of catarrhal conjunctivitis accompany the symptoms mentioned.

The acuteness of vision is not affected, as the prominences which develop at the corneal limbus do not spread on to the cornea as might be feared. Even if they attain considerable size they do not extend into the region of the pupil; and the cornea is not affected in a way to injure the vision.

Neither are the media affected. Of course exceptions do occur."

Reymond was the first to make pathological-anatomical examinations of spring catarrh. He found that the growth at the corneal limbus consisted essentially of a new growth arising from the connective tissue; and that the epithelium had receded.

In one case in which the limbus was surrounded by warty protuberances, the examination showed that those swellings were fully covered by the epithelium and the epithelium dipped into the stroma which latter had partly undergone a hyalin degeneration.

He described these prolongations of the epithelium into the stroma, but later observers could not verify this.

Horner reached the conclusion that it was due to an overgrowth of the epithelium and such an observation had also been published by Vetsch.

In the period of irritation the stroma under the epithelium contained a great many well filled loops of bloodvessels and a cellular infiltration, which surrounded the bloodvessels and diminished toward the sub-conjunctival tissue.

In the quiescent period the vascularization, and the infiltration diminished perceptibly.

The swellings on the palpebral conjunctiva also showed epithelial overgrowth and connective tissue hypertrophy; and but little vascularity. These examinations showed therefore that in

spring catarrh there is a chronic hypertrophy of the epithelium and of the connective tissue. Uthoff came to the same conclusion and found between the layers of epithelium and connective tissue in some places a clear, homogeneous, shining layer, which he took to be coagulated albumen. The same layer Reymond took to be a hyalin product. Knies', Schoebl's, and Raabe's conclusions correspond with the above. Schiele agrees with Reymond. Saemisch adds that these changes in the epithelium, the connective tissue and the intervening tissue point to some irritant as the cause.

Spring catarrh must be considered a rare disease. In some countries it occurs oftener than in others. It occurs more often in Germany, Austria, Switzerland, Turkey, and Italy. Less often in Holland, England, Russia, and North America. Neither is the disease evenly distributed in the same country.

In the usual course of the disease the tissues of the limbus as well as those of the palpebral conjunctiva resume their normal appearance following the last exacerbation.

This restoration is so complete that only a somewhat wider limbus remains, and in the cornea an opacity, extending concentric with the limbus which somewhat resembles an arcus senilis. A peculiar brownish discoloration remains in the portions of the eye which were affected (Burnett).

In regard to diagnosis, spring catarrh somewhat resembles conjunctivitis granulosa (trachoma) and also conjunctivitis phlyctænulosa; however, it may always be differentiated from these by a proper weighing of the pathological changes.

Saemisch claims that conjunctivitis vernalis never affects the retrotarsal fold whereas trachoma almost invariably does.

The dull faded color of the palpebral conjunctiva is quite pathognomonic of spring catarrh, and is never seen in trachoma.

Finally the coincidence of the affection of the lids with the involvement of the limbus will make the nature of the trouble clear, for in trachoma the corneal participation (keratitis pannosa) is quite different. A few days observance will easily enable one to exclude conjunctivitis phlyctænulosa.

In connection with the diagnosis I wish to call attention to an article by Blaauw, of Buffalo, in the October (1909) number of the *Zeitschrift fuer Augenheilkunde.*

He states that when the lid is everted in a case of conjunctivitis vernalis a faint milky cloudiness forms on the conjunctiva which may be increased by rubbing with a glass rod. This

cloudy film which he supposes to be fibrin may then be removed. With this false membrane he makes a cover glass preparation and stains it either with Romanowsky's or Leishman's fluid and finds eosinophilia. The presence of eosinophilia he claims is pathognomonic. He cites Axenfeld as authority that eosinophilia occurs only in pemphigus and infection with trypanosomes or parasites (miasis). He gives H. Herbert credit for having first described the presence of eosinophilic cells in spring catarrh (*Brit. Med. Assoc.*, 28 July, 1903), and again in *Brit. Med. Jour.*, Nov. 2, 1907, under the title of Clinical Observations on Spring Catarrh.

In the same article Blaauw also takes issue with Saemisch in the latter's statement that conjunctivitis vernalis does not affect the retrotarsal fold, and he supports his own observation to the contrary by the statement of Axenfeld.

Nothing definite can as yet be said of the ætiology of this peculiar affection.

Kreibich and Dimmer believe that conjunctivitis vernalis is due to the action of the direct sun light on the conjunctiva.

The prognosis in spring catarrh in general is favorable, as may be gathered from the description given.

Serious, permanent injury to the functions of the eyes is not to be feared, for as has been stated the transparency of the pupillary region of the cornea is but rarely permanently affected.

On the other hand the great tendency to recur annually which may continue for even 23 years is very annoying.

Even though the arcus senilis-like opacities remain they do not interfere with vision.

But if the conjunctiva has been much and often involved then atrophy and shrinking occur which may seriously impair its function.

Unfortunately medicines are powerless in this disease and as we do not know the causative factor, we are obliged to treat it symptomatically.

Fuchs prescribes as local treatment—3 per cent. boric acid, zinc sulphate 1 to 2 per cent., white precipitate ointment, dilute acetic acid 1 drop to 10 or 20 grams water; for itching, xeroform and adrenalin solution; and as general treatment, if the patient is anæmic and has enlarged glands, arsenic and iron, avoidance of exposure to sun, cold baths and douches, and sojourn in the mountains.

Noyes in his text book (2nd Edition) says:

"Circumcorneal hypertrophy of the conjunctiva or vernal catarrh of the conjunctiva is the name of an affection which is rare and consists of a chronic thickening of the tissues at the limbus of the cornea." He then gives a brief description of the disease and refers to the authors in Graefe-Saemisch. Noteworthy is his statement that excision of the mass is the best treatment. He concludes: "I have seen a few cases and should be disposed to employ thermo-cautery."

The term, spring catarrh the literal translation of Fruehjahrskatarrh, which Saemisch gave to this affection when he first described it, is acknowledged by Saemisch to be a misnomer; and he prefers now to call it conjunctivitis vernalis. The French after De Wecker term it conjonctivite printanière. Other terms have been proposed; and Natanson suggests that it be called Saemisch's conjunctivitis, or Saemisch's disease of the eye.

Case A.—Boy, age 3 years, was brought by his parents April 10, 1906, because the eyes appear red and inflamed; the patient is said to be well otherwise. He has the appearance of a well nourished healthy boy. There is considerable swelling of the conjunctiva at the corneal limbus and there is a grayish almost white arc in the superior portion of the cornea near the limbus O.D and O.S., otherwise the appearance is very much like that of phlyctænular conjunctivitis. Zinc sulphate solution 1/960 was applied daily to the everted lids, and a solution of boric acid and borax gr. 5 of each to ounce 1 of water was prescribed to be used night and morning.

At the end of a week the patient was much improved.

He was not seen again until April 20, 1909.

The corneal limbus and bulbar conjunctiva were very hyperæmic; the palpebral conjunctiva also congested, but comparatively little. The white arc in the superior portion of the cornea quite well marked.

In September of the same year the eyes appeared less irritated but the grayish arc in the cornea was as plain as ever. O.D. V.=15/19 to 15/15. O. S. V.=15/19 to 15/15 without correction.

Case B.—Boy, age 6 years, brother of Case A. The patient was brought May 4, 1907, the eyes appeared red, and itch and pain; he does not see the black-board well at school. O.D. myopia 1.25 d. V.=15/19. O.S. myopia 1.25 d. V.=15/19. This boy does not appear well nourished; had nasal trouble when an infant, during which time he was under the care of a rhinologist.

As a result of the nasal trouble the bridge of the nose is somewhat depressed. At present, however, he breathes through his nose and there seems to be nothing further wrong with it.. The eyelids droop slightly giving him a listless, somewhat dreamy, appearance. The eyes are hyperæmic; the conjunctiva at the corneal limbus is somewhat elevated, especially at the inner and outer sides. The characteristic white arc is situated in the superior portion of the cornea, the lower part is clear. The palpebral conjunctiva shows the milky film. Mild treatment such as was prescribed in the previous case was given and the symptoms gradually subsided. In May of the following year he again returned with the same trouble. His parents took him to a more northern climate, and they reported that the signs and symptoms of the disease subsided very much.

However, when he returned to St. Louis in September the palpebral and bulbar conjunctiva were still quite hyperæmic; but the corneal limbus seemed less hazy. In both cases there was enlargement of the glands of the neck and face.

These boys were of German descent; their parents seem healthy and live in excellent hygienic conditions.

It is interesting to note that the sisters, one younger, the other older, did not develop spring catarrh.

TREATMENT OF EARLY STAGES OF SENILE CATARACT.

H. Smith (*Lancet*, April 20, 1912) has found that injecting twenty minims of a one in 4,000 solution of the cyanide of mercury into the subconjunctival tissue is of great benefit and frequently even curative in cases of early senile cataract. It is usually necessary to cocainize the eye and keep the patient under the influence of a small amount of morphine as the injection is very painful and is followed by an intense reaction which appears quite alarming and generally lasts two or three days. He has, however, never seen any harm follow. The most favorable cases are those whose vision is reduced less than thirty-three per cent. Although cases with vision of fifty per cent. of the normal or less may show improvement. Some early cases show no improvement and it is Smith's hope to soon be able to classify these for the sake of prognosis.

MEDICAL SOCIETIES.

AMERICAN MEDICAL ASSOCIATION.

Meeting at Atlantic City, June 4th to 7th, 1912.

ABSTRACTS OF THE PAPERS READ IN THE SECTION ON OPHTHALMOLOGY.

OFFICERS OF SECTION.

Chairman—Adolf Alt, St. Louis.
Vice-Chairman—F. T. Rogers, Providence, R. I.
Secretary—Edgar S. Thomson, New York.

1. Chairman's Address—*Sympathetic Inflammation, with report of a Case of Sympathetic Choroiditis.*—Adolf Alt, St. Louis.

2. *A Clinical Communication on Certain Visual-Field Defects in Hypophysis Disease with Special Reference to Scotomas.*—G. E. de Schweinitz and T. B. Holloway, Philadelphia.

The authors, after some reference to the literature of the subject and to the variations of the visual-field defects in pituary body disease, make special reference to the presence of scotomas, central, paracentral and peripheral. These scotomas the authors attempt to classify, and their paper is illustrated with observations taken from the literature, and with the records of three case histories; two of undoubted pituitary body disease, and one where the lesion, in all probability, was posterior to the chiasm. The comparative infrequency of reference to central scotomas in hypophysis disease in literature is pointed out, several notable communications excepted. The occasional difficulty of distinguishing these scotomas from those produced by various forms of intoxication is discussed, and the situation of the probable lesion is described in one or two instances, although it is pointed out that visual disturbances in hypophysis disease, when they depend on the presence of central scotoma, cannot always be explained, even at autopsy, by finding a definite lesion.

3. *Disease of the Optic Nerve in Myxœdema: Its Relationship to the Thyroid Gland and to the Hypophysis.*—George S. Derby, Boston.

Case 1.—Woman, aged 56. Myxœdema, atrophy of optic nerves, zitemporal hemianopsia, progressive loss of sight. Case 2.—Man, aged 49. Myxœdema, low-grade optic neuritis, chorioretinitis. Concentric contraction of the fields. Progressive loss of sight. Abstracts of twelve similar cases found in literature. Changes in the optic nerve in these cases represent a low-grade inflammation. Three types of fields; temporal hemianopsia, concentric contraction, central scotoma. Summary of evidence in literature pointing to a close relationship between thyroid gland and hypophysis. Atrophy of optic nerve in cases showing first type of field due to enlargement of hypophysis. Discussion of how the other two types of field may be caused.

4. *The Krönlein Operation as an Exploratory Procedure in Affections of the Orbit.*—Arnold Knapp, New York.

Apart from the generally recognized advantage of the osteoplastic resection of the outer orbital wall, commonly called the Krönlein operation, for removing tumors from the depth of the orbit with preservation of the eyeball, the author believes that this operation should be more frequently employed as an exploratory procedure in affections of the orbit, both on account of the facility of the method and to obtain exact information of conditions present in the depth of the orbit. Description of certain steps in the technic. Report of two illustrative cases.

5. *The Surgical Treatment of Exophthalmos.*—Martin B. Tinker, Ithaca, N. Y.

Exophthalmos in goiter cases frequently improved by partial thyroidectomy. In obstinate cases operation indicated for relief of disfigurement or pain, and to remove danger of corneal ulceration from exposure. Tarsorrhaphy sufficient in less extreme cases. Osteoplastic resection of outer wall of orbit for bad cases, and those caused by orbital tumors. Technic of improved operation based on study of anatomy of this region, and results.

6. *Pemphigus of the Conjunctiva; With the Report of a Case.*—Walter Baer Weidler, New York.

Pemphigus of the conjunctiva is not a new disease, as it

was recognized and diagnosed as such as early as 1800. In regard to the ætiology of this disease we are not sure. Crocker inclines to the nervous hypothesis, while Schwimmers says that it is a trophoneurosis. The latest theory that has been advanced is that of the toxins affecting the nerve endings. The progress of the disease in the case reported in this paper was very rapid, the vision of both eyes being destroyed in about three months. No surgical measures were employed. Wassermann and von Pirquet were both negative. The disease was at first limited to the conjunctiva, but at the last stage of the process there was characteristic eruption on the body. The microscopic findings were of interest and are reported in full. The bacteriologic studies revealed nothing new, the bacteria being of the same type as other investigators had already shown.

7. *Subconjunctival Injections in Ophthalmic Therapy.*—E. L. Jones, Cumberland, Md.

This paper is a contention for massive injections of cyanid of mercury, in a large class of ocular diseases, or injuries, not amenable to accepted methods of treatment, having a very wide range of applicability; in ulcerations, infections, specific or non-specific inflammations, penetrated or ruptured eyes, sympathetic inflammation, cyclitis and iridocyclitis, choroiditis, retrobulbar neuritis, persistent episcleritis, keratitis, non-recoverable foreign bodies and after magnet extractions. No theory is proffered to explain all these results, further than that physiologic activities of an extreme degree are brought into play, and Nature by this aid accomplishes results not otherwise attainable.

8. *Sympathetic Optic Neuritis; with Report of a Case.*—Edgar S. Thomson, New York.

Optic neuritis as the result of sympathetic inflammation occurs in two clinical forms, of which the commoner is associated with iridocyclitis. More rarely it occurs as a simple neuritis, or neuroretinitis without uveal involvement. About twenty cases have been reported of which the earlier ones are briefly quoted. Sympathetic neuritis is usually a benign affection if enucleation is performed early, but total atrophy is apt to supervene if enucleation is delayed. The cases of so-called sympathetic atrophy are most probably secondary to neuritis. While the condition occurs but rarely, the possibility of the occurrence

should always be borne in mind, and patients who refuse to have a wounded degenerated eye enucleated should always be under observation.

9. *Phlyctænular Ophthalmia and Its Ætiology.*—H. D. Bruns, New Orleans.

The ocular and cutaneous tests, especially the very delicate skin test, have shown that many patients with phlyctænules are tuberculous. Even the cutaneous test forces us to admit that from 25 to 10 per cent. are not. The writer's tables show that 36.2 per cent. of his phlyctænular children were not tuberculous. Hamman and Wollman, after 1,500 experiences, regard a negative skin reaction as very strong evidence that the child is not tuberculous. The writer does not believe, therefore, that the results of the cutaneous and ocular tests prove that phlyctænular disease is due to the action of a tuberculous toxin, but only that tuberculosis prevails among children we see in our clinics, to a much greater extent than we formerly realized. As tuberculosis has been estimated by means of the skin test to be present in from 71 to 94 per cent., it would be astonishing if we did not find it prevalent among those with phlyctænular disease.

10. *Removal of the Lens in High Myopia.*—Walter Eyre Lambert, New York.

The paper contains a report of nine operations on five patients, both eyes being operated on in four cases, and only one, as yet, in the fifth. In seven of the operations, the Fukala method was used, and in one patient, the extraction after a preliminary iridectomy in one eye, and a needling and linear extraction after an iridectomy in the other. The youngest patient was 16 years old, and the oldest 50. One needling only was required for the girl of 16, and from two to four on all the others. There were extensive fundus changes with vitreous opacities in three of the patients; commencing lenticular changes in one, an almost mature cataract in the patient of 50. The best vision obtained was 20/20 in each eye, in the youngest patient, whose fundus was in good condition, and media clear.

11. *Orbital Cellulitis from Disease of the Superior Maxilla in Children.*—William Campbell Posey, Philadelphia.

Analysis of causes leading to this condition. Recital of

two cases of osteomyelitis of the superior maxilla from toxic condition of general system. Anatomy of superior maxillary bone, with illustrations showing its development, and the changes through which the bone passes from infant to adult life. Symptomatology of orbital cellulitis, and photographs showing several of the sequelæ. Involvement of alveolar process of bone, a not infrequent cause of orbital cellulitis. The effect of slight trauma on the orbit, and how bacteria circulating in the blood may infect the site of a contusion endogenously and give rise to osteomyelitis. Tuberculosis and syphilis of the orbit. Citation of cases from the literature, and the reproduction of some of Onodi's photographs of the sinuses in infants, to prove possibility of primary antral disease in children.

12. *Sclerosis of the Ligamentum Pectinatum and Its Relation to Glaucoma; With Lantern Demonstration.*—F. H. Verhoeff, Boston.

Sclerosis of the ligamentum pectinatum with an open filtration angle, in the few cases in which it has been observed, has been regarded as the cause of the associated glaucoma. Its possible significance in regard to Henderson's theory of glaucoma. Report of ten cases, including both primary and secondary glaucoma, in which this condition occurred. The histologic findings in these cases indicate that the sclerosis of the ligament was dependent on the previous existence of peripheral anterior synechiæ which became separated. The separation of the iris root from the ligament, when it occurred early, was due to traction of the sphincter pupillæ when late, to cicatrical contraction of the atrophied iris. Sclerosis of the ligamentum pectinatum as a cause of glaucoma, therefore, yet remains to be demonstrated.

13. *Nasal Hydrorrhœa; Its Relations to Lesions to the Brain and Visual Apparatus.*—Casey A. Wood, Chicago.

The rather rare condition known as nasal hydrorrhœa is not a definite disease, but a symptom of one or more pathologic states. In the majority of cases, optic atrophy more or less pronounced, accompanies or follows the discharge from the nose. The visual involvement is, like the chief nasal symptom, generally a part of an intracranial disease that underlies the affections of both nose and eyes. The discharge that flows so copiously

from the nose is cerebrospinal fluid, and it is just possible that when epiphora accompanies the hydrorrhœa the lacrimal discharge may, in part at least, be of the same character. The nasal hydrorrhœa usually comes on without apparent reason, is generally intermittent as to amount and time, may disappear for a considerable interval, or may cease entirely as quickly and mysteriously as it came. If there be any organic disease of the nose, it is, as a rule, merely a coincidence.

14. *Some Early Diagnostic Retinal Signs of Arteriosclerosis and Chronic Bright's Disease.*—Albert E. Bulson, Jr., Ft. Wayne, Ind.

Arteriosclerotic changes may remain general, or become most pronounced in the kidneys, giving the well-known picture of Bright's disease. No arteriosclerosis exists without an accompanying involvement of the kidneys, to a more or less extent. There are early retinal signs which point to arteriosclerotic changes, which may remain general, or show most pronounced effects in the kidneys. High blood-pressure is practically always present in these cases and adds to the diagnostic importance of the retinal lesions. Albumin and casts are found in those cases in which the arteriovascular changes are most pronounced in the kidneys. Hypertension as an early symptom, accompanies the retinal lesions, and both are due to a toxin acting through the blood. The eye lesions, often first discovered accidentally, are important as an early diagnostic sign, and should aid in bringing the patient to an earlier rational treatment.

15. *Visual Disturbances from Distant Hæmorrhage.*—William Zentmayer, Philadelphia.

Of comparative rare occurrence. Analysis of reported cases. Effect on the field of vision. In a very considerable percentage there is marked contraction of the superior and inferior halves, simulating hemianopsia; true homonymous hemianopsia, central scotoma and peripheral contraction are also seen. There may be no ophthalmoscopic changes, or there may be optic atrophy, neuritis, papillœdema. Prognosis grave. Most frequently follows hæmorrhage from the stomach and bowels, and uterine hæmorrhage. Condition of patient at the time of hæmorrhage an important factor. Pathogenesis varied. Probably in a majority of cases it is due to degeneration of the ganglion cells

of the retina, as the result of ischæmia. Various theories. No recent pathologic studies. Treatment—prophylactic. Hypodermoclysis and intravenous injection of blood-serum advised.

16. Address: *Provision for the Proper Teaching of Ophthalmology in Medical Schools.*—Edward Jackson, Denver.

Modern ophthalmology has developed to a science and art, the mastery of which claims the lifelong labor of our best workers. Its literature, its diagnostic procedures and its operative technic require as much time and as careful training as other branches of medicine. The provision of sixty hours in the recommended medical curriculum is admitted to be utterly inadequate. Ophthalmology is now learned by self-instruction, with such aid from books, clinics and teachers as the individual student chooses. The need of trained opthalmologists is great enough to justify provision to meet it. From 200 to 400 per year are needed to keep up the supply of competent oculists for the population of the United States. The medical schools already considering the supervision of their students, through a fifth or hospital year, should at once provide for a definite adequate curriculum in ophthalmology, which still might utilize all present opportunities for instruction in ophthalmic science and art.

17. *Cataract Extraction with Corneal Suture.*—Edward C. Ellett, Memphis.

This is a report of thirty-two cataract extractions, done after Kalt's method of corneal suture. The operation is considered under the following heads: The introduction and removal of the stitch; accidents; the control of iris and vitreous prolapse by the stitch; the toilet of the wound; secondary iris prolapse after corneal suture; the course of healing; and results. The paper is not presented as a brief for the operation, but as a result of this experience with it, and a consideration of its advantages and disadvantages.

18. *Preparatory Capsulotomy in Extraction of Immature Senile Cataract.*—Percy Friedenberg, New York.

Rapid maturation of the incompletely opaque lens in adults, as a result of extensive but not deep incisions into the anterior capsule, twenty-four hours or less, before the extraction

operation, offers a means of saving our patients much time, and facilitating the complete removal of cataract, with a minimum of irrigation, or similar means of removing debris, and the promise of better visual results. A historical sketch is given, with some remarks on the rationale of Homer Smith's procedure, and a suggestion to supplant his crucial incision by peripheral cuts, so as to allow later excision of a central piece of the capsule with forceps. The writer desires to have a general discussion of the pros and cons of preparatory capsulotomy, and the experience of the members of the Section as to results, and possible complications.

19. *Suggestions Regarding Some Points in the Technic of Cataract Extraction.*—Samuel Theobald, Baltimore.

The "suggestions" have to do with combined extraction only, as the author has abandoned simple extraction and has felt no inclination to experiment with the Smith operation. The initial incision, made with a rather broad Graefe knife, should be throughout, in the sclerocorneal juncture, ending with a conjunctival flap. The iridectomy, if one would secure a small keyhole-shaped coloboma, can be most satisfactorily made with the author's reverse-curve iris scissors. The capsulotomy: There is no advantage in removing a small piece of the anterior capsule. Instead, a large rent in the capsule is aimed at, and is made with a Graefe cystotome, a long vertical rent, extending beyond the lower margin of the pupil, being crossed by a shorter horizontal one. Delivery of the lens. Too persistent efforts to deliver small remnants of cortical matter, chiefly because of the increased risk or loss of vitreous humor, are reprehensible, especially if the cataract is mature, or the patient advanced in years.

20. *Visual Results After the Smith Intracapsular Cataract Operation.*—D. W Greene and J. W. Millette, Dayton, O.

The operation of extracting the lens in its unopened capsule is so ideally perfect in its conception and high visual acuity that it should be the method of choice, all other things being equal. That it is not in general favor is evidence that the profession does not consider that all things are equal as between an extraction in the unopened capsule and one in which the capsule is opened. The statistics of the paper will show that considering successes in cataract operation solely from the stand-

point of high-grade vision the intracapsular is superior to the capsulotomy operation. If this is a true statement of the condition under which we operate, the operation which furnishes the highest average of visual acuteness, which is the end-aim of every cataract operation, is entitled to our respectful consideration; provided it is evident that the traumatism of the operation is not a special element of danger to the eye, and accidents and complications are not so frequent as to lower the percentage of visual acuteness.

21. *Eye Complications Caused by Hookworm Disease; With Special Reference to the Formation of Cataracts.*—F. Phinizy Calhoun, Atlanta, Ga.

The literature on hookworm disease shows that certain eye complications, notably, circulatory disturbances of the retina, optic neuritis, asthenopic symptoms in general, have been known for some years, but changes in the lens have only recently been recorded. In this paper, histories of three cases of soft cataract in the young, are reported with laboratory examinations, and progress made under treatment. It is the belief of the author that these changes in the lens are due to a toxæmia, with or without an accompanying anæmia induced by the hookworm.

22. *Measurement of Fatigue of the Ocular Muscles.*—Lucien Howe, Buffalo, N. Y.

Object and method. Fatigue of muscles measured by the ergograph. The ophthalmic ergograph in general. The convergence ergograph. General considerations; construction; use for laboratory study; clinical use; measurements. Fatigue of abduction. Fatigue of superduction and subduction. Abnormal fatigue of the extraocular muscles in normal and abnormal eyes; the accommodation ergograph. Abnormal fatigue or extra- and intra-ocular muscles together. Summary of the data. Conclusions.

23. *The Findings of the Tropometer in One Hundred Normal Eyes; its Value in the Study of Strabismus.*—Wendell Reber, Philadelphia.

Description of various methods of estimating the occular rotations, all of which finally led up to the invention and use

of the tropometer. Work of previous observers, and averages of rotations established by them. Stevens' figures. Own observations on 100 eyes, conforming very closely not only to those of Stevens, but also to the averaged averages of the older workers. Variations in the normal rotations. Interpretation of the findings with the instrument. Application to the study of strabismus. Significance of the rotations as found in strabismus, and their value as an aid in the final judgment as to what operative procedures should be resorted to. Plea for the use of the instrument in the study of strabismus.

24. *Normal Values of the Acommodation at All Ages; A Statistical Study.*—Alexander Duane, New York.

This is an attempt to determine the accommodative power at all ages from 8 to 68, and the limits within which this power may vary in normal cases. Some 1,300 subjects have been examined, and after rejecting all cases in which the results were uncertain, or vitiated by some abnormality of the conditions, there still remained over 1,000 that could be utilized. The results showing the amount of acommodative power and its decline from year to year, are presented both graphically and in the form of a table. The graphic delineation shows that the decline takes place in a curve of quite regular form, differing somewhat from curves obtained in previous investigations. As compared, however, with results presented by the author to the Association three years ago, the changes are comparatively trifling. Moreover, we now seem to have reached the point where the addition of each hundred cases makes no appreciable difference in the results.

25. *Dangers to and Requirements of the Eyes of the National Marksman.*—John A. Donovan, Butte, Mont.

The number of qualified marksmen in our army and navy is more than fifteen times that of six years ago. The ranges are from 200 to 1,000 yards; size of bull's-eye in use, 8 to 36 inches, giving visual angle of from 4 feet to 3.33 feet. Three theories regarding seeing sights and target at one time: each has many advocates. Author maintains last theory. 1. The rapid succession of accommodation. 2. Theory of continuous retinal impression. 3. While looking at target, both sights seen with accommodation suspended. Most danger to marksman's eyes

from overstrain, effects of lights, and small specks from back fire. Large lenses fully correcting the ametropia, colored to protect eyes in bright light, should be constantly worn.

26. *Case of Uniocular Polyopia Existing in Both Eyes.*—John C. Bossidy, Boston.

A hysterical girl has polyopia existing in both eyes; she was seen in 1902-4; was again seen this year. The polyopia had disappeared in 1904. She had no cerebral lesion; is now bright mentally. Her history would seem to disprove Parinaud and De la Tourette that such polyopia was due to irregular contraction of the ciliary muscle. She never menstruated, which may account for the hysteria. No published explanation seems to fit this case.

27. *Morgagnian Cataract.*—Burton Chance, Philadelphia.

Morgagnian cataracts not of common occurrence nowadays, owing perhaps to practice of operation at stage of maturity. But few references in the past ten years. Usually monocular and long standing; may be congenital or secondary to uveal disease; never after traumatism nor operative. The cortex liquefies and the nucleus floats more or less freely in the fluid within the capsule. The nucleus may remain permanently below the pupil so that vision is restored; there may be complete absorption. Author reports two cases with operative procedures and results with general surgical directions; advises that cataracts be not allowed to go on to hypermaturity because of dangers and complications attending the operation.

The officers elected for the coming years are: Chairman, Dr. Hiram Woods, Baltimore, Md.; Vice-Chairman, Dr. E. S. Thomson, New York City; Secretary, Dr. G. S. Derby, Boston, Mass.

MEETING OF THE PHILADELPHIA POLYCLINIC OPHTHALMIC SOCIETY.

March 14, 1912.

Dr. Wendell Reber in the Chair.

Dr. John H. W. Rhein presented a case of "Optic Neuritis and Left Nerve Palsy of Specific Origin."

Woman of 50, with headache and failing vision dating from January 2, 1911. Paresis of the left external rectus and moderate optic neuritis which was more marked on the left side. Face and hands very large, suggesting acromegally. There was no paralysis of any of the cranial nerves. Station good and gait normal. The grasps were equal and good and there was no evidence of any paralysis of motion or sensation. Slight exophthalmus of the left eye; left palpebral fissure wider than the right.

Positive Wasserman and von Pirquet. Skiagraph negative. Salvarsan injection on the 12th, 22d and February 11th, and gradual improvement in the paralysis of the external rectus began the next day.

A tumor of the brain was at first suspected in this case. The grossness of the face and hands suggested acromegally but this was neither confirmed by the skiagraph nor the subsequent study of the case, as the patient was quite positive that the face and hands had always been large and that there had been no perceptible increase in size of recent origin.

In view of the presence of a positive Wasserman reaction the case was looked upon as one of syphilitic meningitis, and the improvement of the paralysis of the external rectus muscle following the salvarsan injection was looked upon as confirmatory evidence of this diagnosis.

Dr. Rhein also presented a case of Leber's Atrophy.

DISCUSSION.

Dr. William Campbell Posey considered the first case to be one of cerebro-spinal syphilis. Both optic nerves were considerably inflamed, the left being the more so. The paralysis of the external rectus was complete. There had been no inflammation of the iris or ciliary body, this was unusual in cerebro-spinal syphilis.

He was much interested in the third case reported by Dr. Rhein and thought it was probably one of hereditary optic nerve atrophy. Some years ago he had observed this affection in three generations of the same family, the patients being a young man of 21 years of age, an uncle about 45 years of age and a great uncle about 65 years of age. All three had a vision in each eye of about 3/60, the center of the field of vision being occupied by a large central scotoma. Owing to the appearance of the atrophy at a period when the sutures of the skull were becoming firmly ossified, he had advanced the theory some years ago that the retrobulbar neuritis occasioning blindness could be accounted for by a preternaturally small optic foramina, in consequence of some anomally in the development of the spheniod bone. To substantiate this theory, Dr. Posey said he had taken measurements of the skulls of the patients before mentioned, which seemed to indicate some faulty development of the skull. It is the general belief that the disease is transmitted through the female side of the affected families but that only the male members develop the atrophy.

Dr. Zentmayer said that hereditary optic atrophy certainly did appear in female members of a family but not in a very large per cent.

Dr. D. Forest Harbridge, referring to the case of Leber's atrophy presented by Dr. Rhein, added the following history:

William and David B., ages respectively 22 and 24, with good personal history. The younger brother first developed symptoms of failing vision with a positive scotoma early in November, 1910. The older brother early in May, 1911. When first seen by Dr. Harbridge early in August, 1911, they presented clearly defined disc outlines. The upper and lower borders slightly hazy, atrophic and decidedly pale to the temporal side. The vessels were moderately reduced. The general character of the fields, taken at different intervals, showed a more or less concentric reduction with large absolute scotoma. In one a broken ring zone of functioning retina, the balance being lost.

Vision, William, fingers at 6 inches; David 1½/60. Wassermann negative. Both were treated actively in the Chester Hospital for six months. Vision improved to 3/60, fields remaining practically the same. Immediately following the use of nitrate of amyl there was no appreciable difference in the size of the vessels.

During their stay in the hospital William developed a severe

attack of typhoid fever and for two weeks during this period was absolutely blind.

Dr. Howard F. Pyfer: We have in Norristown a family with undoubted hereditary optic nerve atrophy. The history of this family has been traced back as far as 1780. The males have inherited the disease through the female side of the family. No females, as far as I am aware, have this disease.

I have had an opportunity of examining a patient who has become a victim to this disease. He first had œdema and congestion going on to a gray discoloration of the nerve head and finally the optic atrophy.

Blindness is not complete in any of these men; but at night, unless they travel along well-known routes, they easily become lost.

Dr. Wendell Reber: I think there are more of these histories than we suspect. There are certain anomalous forms that do not correspond to the type. It may be that when we know more about this disease we shall find it answers to the law of the Mendelian Theory. The family history is extremely hard to elicit, and we often will be misled by the histories. There is a disposition of the disease to show itself soon after puberty or not until about 45 or 50.

Dr. William Zentmayer spoke on "The Therapeutics of Diseases of the Lacrimal Apparatus."

He advised that in atresia of the lacrimal duct a probe be passed through the duct into the nose. Only lately he had seen a dacryocystitis in a child 2½ years old, where the atresia had been left to nature to cure. His attention had been called by Dr. Dewey to an occasional epiphora, the result of wearing "shure-ons" and similar forms of nose glasses. When the finger pieces are released the lower lid is drawn away from the globe so that the punctum does not lie against the ball. He asked, "Shall the treatment of lacrimal obstruction and its sequelæ be conservative or radical?" Answering it by saying that in the beginning of the trouble it could not be too conservative, while in the later stages it should be radical. In simple obstruction the entire tract should be syringed out with a mild astringent lotion by introducing for a very short distance into the canaliculus the end of a fine gold canula. The point should not be sharp, as there is danger of lacerating the tissues and thus allowing the solution to get into the cellular tissues. If this fails to relieve the condition, careful probing is to be tried after clipping

up the canalicus. He uses the Bowman probe, rarely above a No. 4. If a fine probe has been used it is better not to follow with syringing, because of the danger of orbital cellulitis should any of the solution enter the orbit. The injection of silver solutions is not advised. In the presence of dacryocystitis the same measures are to be tried and only after a thorough trial is extirpation of the sac advised. If a mucocele has been formed extirpation should be done at once. If an operation that opens the eyeball is contemplated, extirpation may be done for even a slight dacryocystitis. In acute dacryocystitis, the abscess should be opened with a free incision carried into the posterior wall of the sac. He considers it unsurgical to introduce lead styles into an abscessed sac in the acute stage. While extirpation of the sac is a very satisfactory operation in pus cases, it should not be done for simple obstruction due to stricture, as in quite a considerable percentage of cases there is annoying epiphora for some time following the operation and in a few cases it is permanent, consequently little has been gained by the procedure. However, in one such case a cure was obtained by the use of the actual cautery in the canaliculus. It is of the utmost importance that intra-nasal treatment should be carried out in connection with the treatment of all disc conditions of the lacrimal apparatus, and anti-syphilitic treatment should be added in children.

DISCUSSION.

Dr. S. D. Risley: "While there is much diversity of view maintained by different ophthalmic surgeons regarding the treatment of this very common affection, my own views as to methods are quite closely in accord with those outlined by Dr. Zentmayer. I have always been an advocate of conservative methods in the treatment of diseases of the lacrimal drainage system, and still believe that much of its reputation for chronicity depends upon faulty and violent procedures for its relief."

For many years past he has employed probes only in exceptional cases and rarely finds it necessary to extirpate the lacrimal sac. In the minor cases of partial retention of the tears, he has found that to dilate the lower punctum without violence, after the instillation of cocaine, sufficient to admit the point of the fine gold canula of the lacrimal syringe he has devised; then the sac can be thoroughly irrigated with any desired solution. If the solution does not flow to the nostril a few drops of a solution of cocaine and adrenal chloride, carried into the sac and allowed to remain there a few moments, will contract the tissues

and permit the passage of fluids into the nostrils, without the passage of a probe. A cure in a large percentage of cases could be effected in a short time by this simple procedure. If fluids cannot be made to pass through the duct in this way, he thinks the lower canaliculus should be carefully slit up to, or near, where the canaliculus enters the sac, but not in the sac. A small probe, not larger than a number 3 or 4 Bowman, can then be carefully carried into the sac and thence to the entrance of the nasal duct and through it into the nose. There is always danger in this procedure lest the inflamed and more or less friable mucus lining of the irregular bony walls of the duct be torn or pierced. He thinks this is far more likely to occur with a number 1 probe of the Bowman series than with a number 3 or 4. After the safe passage of the probe, the walls of the duct should be irrigated with some mild unirritating alkaline wash. If pus is present in the sac, after thorough washing, he finds weak solutions of silver nitrate, not stronger than 1 grain to the ounce, of great service in disinfecting the sac and duct. It should not be allowed to remain in the closed sac very long, but after a moment or two carefully washed away or neutralized by the alkaline wash. The nostrils in every case of lacrimal disease should receive careful attention. In chronic dacryocystitis, in cases of thickening of the sac walls, where there is accumulation of a glairy-mucoid discharge, he has found frequent irrigation of the sac with weak solutions of iodine of great benefit. This solution he secures by a few drops of Lugol's solution of iodine in water. He never passes a large probe and never uses styles, but often in former years when they were so much in vogue at the hands of the general surgeon, has had occasion to remove them.

Dr. Posey said his treatment followed much the same line as that laid down by Dr. Zentmayer and Dr. Risley. He has, however, relinquished the use of probes for many years, preferring the insertion of styles and the removal of the sac. It was his practice in cases complaining simply of increased lacrimation, to try simple syringing of the lacrimal passages for a time, but if this treatment failed, styles were inserted.

He called attention to the importance of properly entering the sac in the performance of Bowman's operation and said that Weber knives with curved tips were to be discarded for those with straight tips. Operators should be careful to see that the lower canaliculus is kept open by permitting the head of the style to rest securely in the sulcus. He removes the style after

three or four months and if the lacrimation still persists, he then advises the removal of the sac. This latter is his operation of choice also in all cases of mucocele.

In acute dacryocystitis, he incises the lower canaliculus and puts in a style while the paatient is under the general anæsthetic, thereby affording not only relief to the conditions excited by the abscess, but also removing its cause. He thinks that the style permits drainage, and in many years of experience with this procedure, he has never had but the best results.

He cautions against syringing out the sac with any but the simplest solutions and said he had once observed optic atrophy arise in the practice of another, from orbital cellulitis set up by washing with a solution of nitrate of silver.

Dr. Reber said that chronic dacryocystitis is generally a very much treated dacryocystitis.

D. Forest Harbridge, M.D., Secretary.

PATHOGENESIS OF GLAUCOMA.

J. Bjerrum (*Klinische Monatsblätter für Augenheilkunde*, January, 1912) believes that increased intraocular tension is not responsible for the symptoms of irritation in glaucoma but that these are the expression of a definite inflammation. He also is of the opinion that the dilatation of the pupil is not due to the direct consequences of increased pressure, since injections into the vitreous do not produce any dilatation of the pupil nor any congestion of the eyeball, although the eye becomes very hard. He suggests that both the dilatation of the pupil and the symptoms of irritation occurring at the same time as the glaucomatous pupillary dilatation may be caused by the action of some toxins. While increased intraocular pressure does not cause the dilatation of the pupil nor the congestion or inflammatory symptoms, he thinks there can be no doubt but that it is responsible for the excavation of the optic nerve head and also that arterial pulsations in glaucoma are due to it. Since, aside from the disturbance of vision due to a loss of transparency in the refracting media, the loss of sight stands in direct relation to the excavation of the optic papilla, it would seem to be true that the increased pressure is of definite significance in the pathology of glaucoma and especially important in practice as an indication for treatment.

BOOK REVIEWS.

EXPERIMENTELLE STUDIEN UEBER DIE ENTSTEHUNG VON ANGEBORENEN STAREN UND MISSBILDUNGEN BEI SAEUGETHIEREN. (Experimental studies regarding the origin of congenital cataracts and malformations in mammals). By Dr. H. E. Pagenstecher. 11 illustrations in the text and two plates. Leipzig, 1912 : S. Hirzel. Price 5 marks.

By these extremely interesting and successful experiments Pagenstecher has proven that it is possible to produce cataracts and other malformations in the eyes of mammals at will by the ingestion of toxic substances (in his case naphthalin) into the system of the pregnant mother. The details of this admirable report should be studied in the original by every one interested in the question of congenital malformations.

DAS TRACHOMA NACH DEM GEGENWAERTIGEN STANDE DER FORSCHUNG. (Trachoma, its present scientific status.) By Dr. Stanculeanu and Dr. D. Mihail. 23 illustrations in the text, 2 charts and 1 plate. Wein and Leipzig, 1912. Josef Safar. Price 3,20 kronen.

This little brochure gives in a short, but clear and complete form our present knowledge of this dread disease, trachoma. Its history, its geographical distribution, ætiology and pathology are followed by its clinical aspects and complications. The last chapters refer to prophylaxis and treatment. The illustrations are good and to the point.

DIE ENTSTEHUNG DER KURZSICHTIGKEIT. (The development of myopia.) By Dr. G. Levinsohn. 3 illustrations in the text. Berlin, 1912. S. Karger. Price 2.50 marks.

The author has shown in this monograph that neither the pressure of the intraocular nor that of the extraocular muscles can have an influence on the stretching of the eyeball and the production of myopia to the extent hitherto assumed. He is convinced, and in proof adduces a series of experiments on animals that myopia is, in the main, brought about by the bending of the neck and head during nearwork. By hanging up animals by their hindfeet he produced an increase in refraction which in some cases reached 4.5 D, thus proving his contention.

DISEASES OF THE EYE. A manual for students and practitioners. By J. H. Parsons. Second edition. Philadelphia, 1912. P. Blakiston's Sons & Co. Price $4.00.

The second edition of this very practical textbook shows a decided improvement on the first one. It is particularly enriched by new illustrations and additions in the text. It is an excellent text-book for students.

THE OCULAR MUSCLES. A practical handbook on the muscular anomalies of the eye. By H. F. Hansell and W. Reber. Second edition; with 3 plates and 82 illustrations. Philadelphia, 1912. P. Blakiston's Sons & Co. Price $2.50.

This very useful handbook, which is characterized by its clear and simple wording and its practical description, will undoubtedly become yet more popular in its second edition. It is an excellent guide for the student of the practical side of muscular anomalies of the eye. ALT.

A STUDY OF THE BACTERIA OF THE CONJUNCTIVA.

Kenneth M. Lynch (*N. Y. Med. Jour.*, March 9, 1912), in order to find out the frequency and kinds of bacteria present in the normal conjunctival sac as also in both acute and chronic inflammatory conditions, has made a study of 200 spreads obtained in the Philadelphia General Hospital. After giving his findings in detail he says in conclusion: A summary of the study shows 57.6 per cent. of normal conjunctivæ to harbor the xerosis bacillus, 20 per cent. the pneumococcus, 3.8 per cent. the diplobacillus of Morax-Axenfeld 3.8 per cent. staphylococci, 9.2 per cent. Friedlander's bacillus, 3 per cent. yeast fungi; a few contained unrecognized bacteria, while in only 40 per cent. could no bacteria be found.

In the acute cases it was demonstrated that practically always the conjunctival sac contained the xerosis bacillus immediately after a gonococci infection, while the pneumococcus, pneumobacillus, and staphylococcus were each present in a few in pure culture.

In the chronic cases the xerosis bacillus was demonstrated in nearly a hundred per cent., while mixed with it in a few cases were the diplobacillus of Morax-Axenfeld, the pneumobacillus, and staphylococci.